

ABSTRACT OF DISCLOSURE

A process material crust, such as an ion-implanted photoresist, is removed from a treatment object. A halogen-free plasma is generated using a hydrocarbon gas in combination with oxygen gas to subject the crust to the plasma. Methane may be used as the hydrocarbon gas. This plasma may also be used to remove underlying unaltered photoresist and ion implantation related residues. The plasma may likewise be generated using a hydrogen containing gas, which may be pure hydrogen gas, in combination with oxygen gas. Several techniques are used which employ exposure of the treatment to a hydrogen/oxygen based plasma with subsequent exposure to a hydrocarbon/oxygen based plasma.